### Influenza Vaccine Crisis/ History of Successful Immunizations

Donna L. Weaver, RN, MN
National Immunization Program



NASA Occupational Health Conference South Lake Tahoe, NV June 28, 2005

#### **Use of Trade Names**

The use of trade names and commercial sources during this presentation is for identification only, and does not imply endorsement by the U.S. Public Health Service, the Department of Health and **Human Services, or the Centers for** Disease Control and Prevention.



#### **Disclosures**

- The speaker has no financial interest or conflict with the manufacturer of any product named in this presentation
- The speaker will not discuss the use of any product in a manner not approved by the U.S. Food and Drug Administration (FDA)
- The speaker will mention vaccines not currently licensed by the FDA



#### **Adult Immunization Overview**

- Immunizations Across the Lifespan
- Disease burden & immunization recommendations
- What does the future hold?
- Resources



# Immunizations Across the Lifespan



### Recommended Adult Immunization Schedule UNITED STATES · OCTOBER 2004—SEPTEMBER 2005

Summary of Recommendations Published by

#### The Advisory Committee on Immunization Practices





#### Recommended Adult Immunization Schedule by Vaccine and Age Group

#### UNITED STATES · OCTOBER 2004 - SEPTEMBER 2005

Age group (yrs) ▶ Vaccine ❤	19-49	50-44	≥65		
Totassa, Diphtheria (T4)*		1 dose booster every 10 years <sup>1</sup>			
Influenza	1 dose a	1 dose annually			
Pseusococcal (polysaccharide)	1 dose <sup>3,A</sup>		1 dose <sup>3,4</sup>		
Hepatitis B*	3 doses (0, 1-2, 4-6 months) <sup>6</sup>				
Hepatitis A*	2 doses (0, 6–12 months) <sup>6</sup>				
Measles, Munips, Rubella (MMR)*	1 or 2 doses <sup>7</sup>				
Vario el la*	2 doses (0, 4-8 weeks) <sup>6</sup>				
Meningococcal (polysaccharide)	1 dose <sup>9</sup>				
Covered by the Vaccine Is july Corepensation Program.  See Footroess for Recommended Adult Instrumination Schedule on back cover.					
	For all persons lecture For parsons lecture	il occurrentecou	I fick J.A., WID		

The Recommended Adult Immunization Schodule is Approved by the Advisory Committee on Immunization Practices (ACIP), the American College of Obstatricians and Consentagists (ACID), and the American Academy of Family Physicians (AEF)

This schedule indicates the recommended ago groups for routine administration of currently literated vaccines for present agod > 10 years. Uponsed combination streeties may be used whenever any components of the combination are indicated and when the vaccine's other components are not contrained cated. Provides should consult manufactures' package inserts for datafied recommendations.

Report all clinically significant postword ration reactions to the Vaccine Advance Event Reporting System (WERS), Reporting forms and instructions on filling a VAERS report are available by tokyllines, 801-822-7967, or from the VAERS wellstell by http://www.craes.org.

Information on how to file a Vascine Injury Componention Program chimis available at <a href="http://www.bess.gov/usp.tricg">http://www.bess.gov/usp.tricg</a> or by telephone, 800-338-2382. To file a date for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Weshington, DC 20005, telephone 282-219-9657.

Additional information about the vaccines listed above and contraindications for immunication is available at <a href="https://www.color.gov/edg-go-from-the-Harboral Immunication Harboral Immunicati

#### Recommended Adult Immunization Schedule by Vaccine and Medical and Other Indications

#### UNITED STATES · OCTOBER 2004 – SEPTEMBER 2005

Indication≱ Vaccine ▼	Programcy	Diskotas, haart discoso, otranic patracrany disease, directic ther disease (including obranic skeledism)	poer silvel endprant.	stage renal disease, recipionts of	Asplesis (including election spiescentrity said terminal complement component deficiencies)	HA <sup></sup> Infection	Resti can wetan
Tetasus, Diphtheria (Td) <sup>a,1</sup>							
Influenza <sup>2</sup>		A, B			c		
Pheemococcul (polysaccharide) <sup>24</sup>		В		0	0, E, F	0, 6	
He patitis B *.5				н			
Hopatitis A*.5		1					L
Measles, Mumps, Rekella (MMR)*3						J	
Varicella**,*			K				

"Covered by the Yactine Injury Compensation Program.

Combrouping Iffuid.

— 9-turnso immunociolicioney virus.

See Special Notes for Hedical and Other Indications below. Also see Footnotes for Recommended Adult Immunication Schedule on/bad cover.

For all parsons in this group Fer parsess lacking documentation of versionation or oxidence of discuss

For parsons at risk (La, with mades (suposars influences) Gerränfestel

#### Special Notes for Medical and Other Indications

- A. Although chronic liver dissess and alcoholisms are not indications for influence vaccination, administrar 1 does narrowly if the patient is aged ≥ 58 years, has other indications for influence vaccine, or requests vaccination.
- B. Asthmais on indication for influence vaccination but not for presence coal vaccination.
- 6. No data exist specifically on the risk for severe or complicated influence influence among persons with applicate. However, influence is a sisk factor for secondary bacterial influctions that can cause severe classes serves present with applicate.
- D. For pursons agail < 65 years, reversions sees after ≥5 years have elapsed since initial vaccination.
- E. Altrinister me singosecos l'escrire and consider Hescrophilus influenzas type b vascine.
- F. For persons undergoing elective splenectorry, vaccinate > 2 weeks before surgery.

- G. Varcinate ex poor after diagrenis as possible.
- H. For here didynin periorite, can special herealities of raceins (40 µg/ml.) or two 20 µg/ml. Joses administrar if at one body site. Veccimes early in the course of road disease. Assess artifoldy there to be patitis B metion artigon (arti-HE) levels amounty. Administrar skillional doors if set-HE levels declare to < 11 ml Urid.</p>
- 1. For all purpose with dyonic from dimuns.
- Withhold MAR or other recodest-containing vaccinus from HU-infected persons with middance of nerves interesconggression [nos MIGNE 1981-67 pts. FR-1]-2 1-2 and MIGNE 2002;51 [No. RR-2:22-4].
- K. Person with impaired humoral immunity but intact culture immunity may be receivated [see MMMR 1998,68]No. RR-Q1.
- Ne data to support a recommendation.

## 



### **Annual Adult Vaccine-Preventable** Disease Burden Is High

- VPD's kill hundreds of times more adults than children every year
- More than 47,000 deaths per year:
  - 20,000 from pneumococcal disease
     20,000 from influenza

  - 5,000 from hepatitis B
- Coverage levels generally low
- Many adults unnecessarily remain at risk



#### Vaccines for a Few Adults

#### **Vaccine**

Meningococcal

Hib

 IPV, Typhoid, Hepatitis A, Yellow Fever, Others

#### **Indications**

**Asplenic** 

Travel Military

College freshmen in dorms

**Asplenic** 

**Travel** 



#### Vaccines for Some Adults

Vaccine Indications

Hepatitis B Vaccine Increased Risk

• MMR Vaccine Born after 1956

Varicella Vaccine Susceptible

### Vaccines for Many Adults

**Vaccine** 

**Indications** 

Tetanus and diphtheria toxoids All - every 10 yrs

Pneumococcal Vaccine

All 65 yrs Underlying Illness

Influenza Vaccine

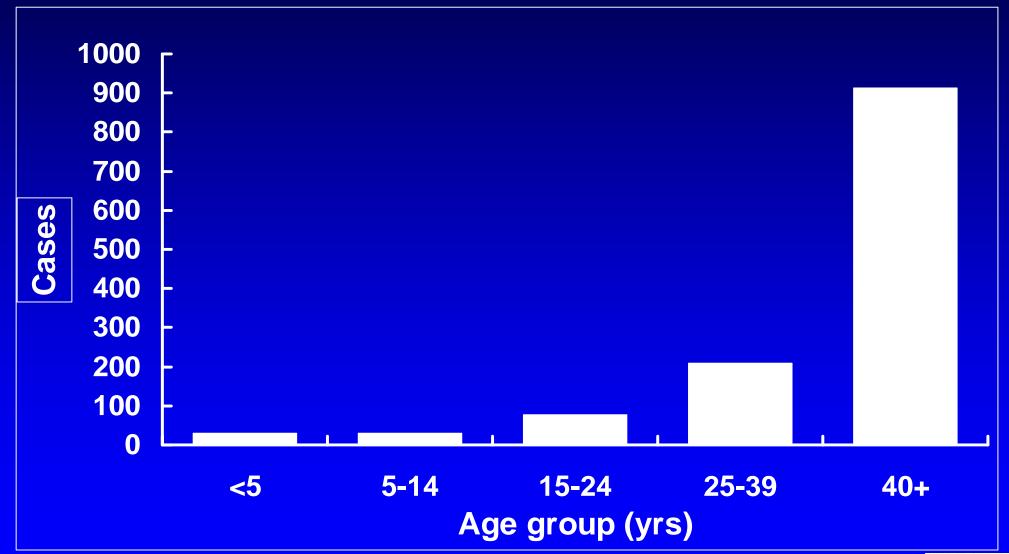
All 65 yrs
Underlying Illness
Contacts

### Tetanus and Diphtheria

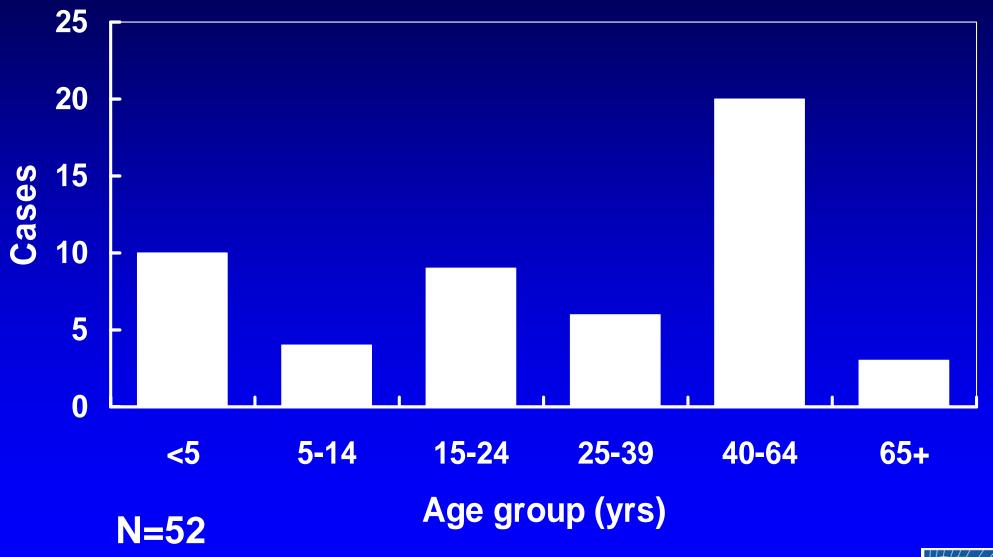




### Tetanus – United States, 1980-2002 Age Distribution



#### Diphtheria – United States, 1980-2002 Age Distribution of Reported Cases



#### **Tetanus and Diphtheria**

 >50% of adults do not have protective levels of antibodies against tetanus and diphtheria toxins

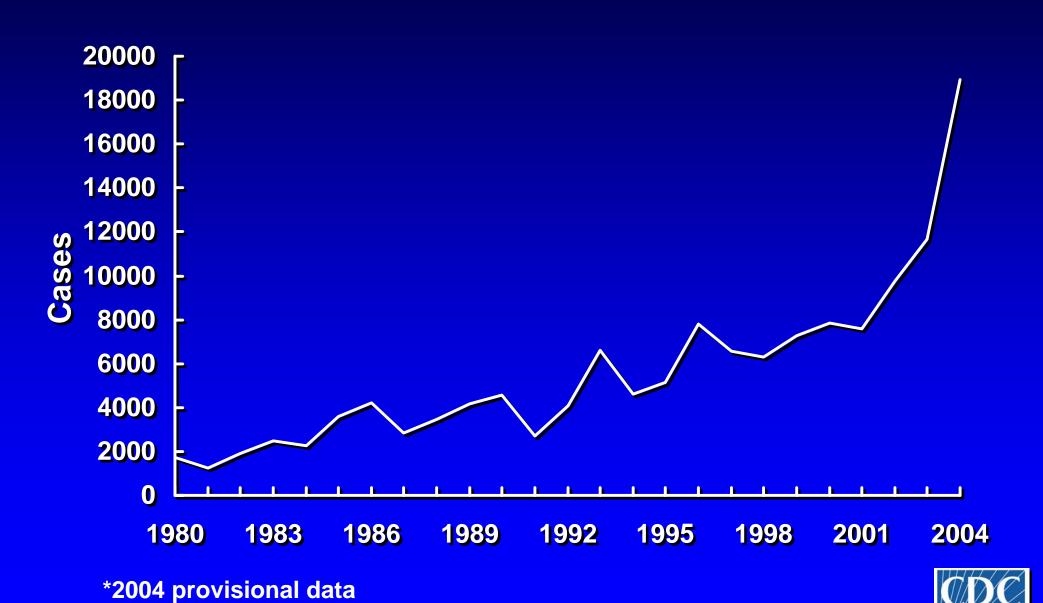
 May not have received a primary series of tetanus- and diphtheriacontaining vaccine

Do not receive routine booster doses

### **Combating Pertussis Disease**

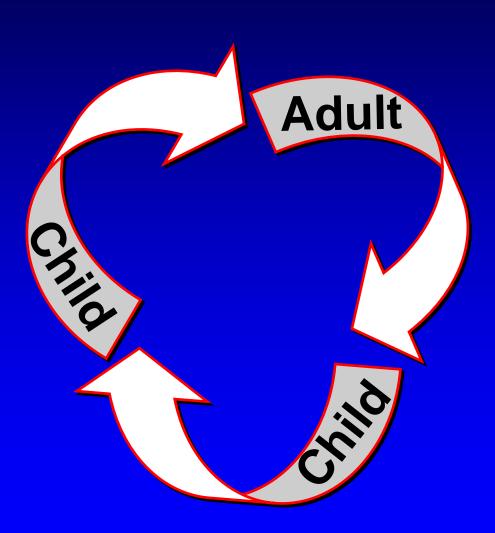


#### Pertussis – United States, 1980-2004\*



DEPARTMENT OF HEALTH AND HUMAN SERVICES

### The Vicious Cycle of Pertussis

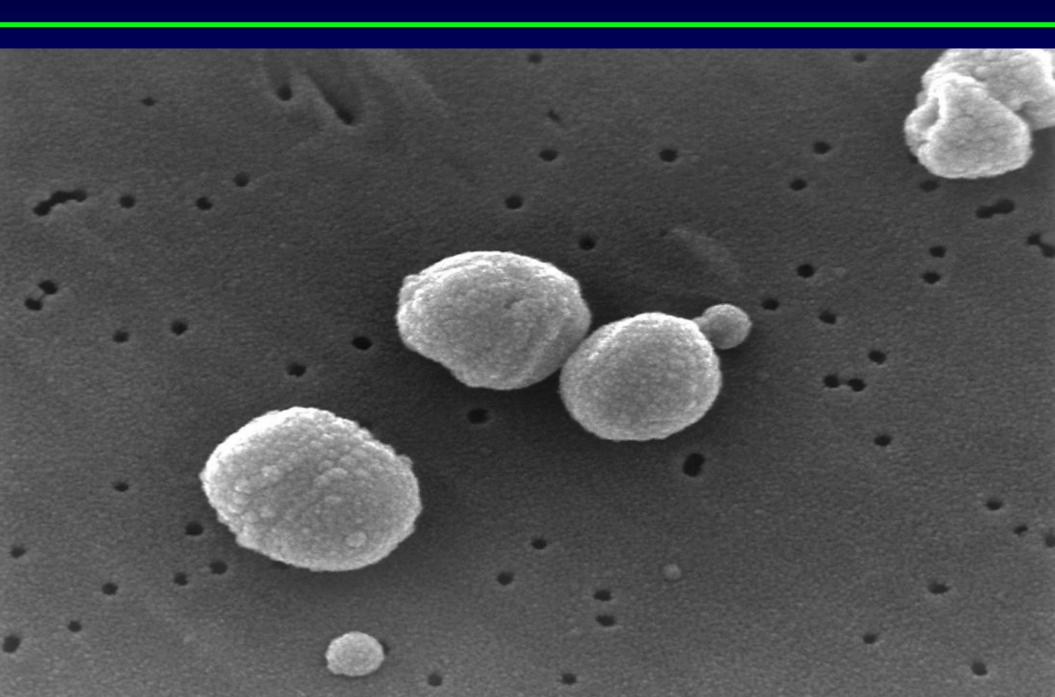


- Accounts for up to 7% of cough illnesses per year, and 20%-25% of cough illnesses lasting more than 7 days
- In 1997-2000, the pertussis incidence rate among adolescents and adults increased by 60%
- Adults often source of infection for children

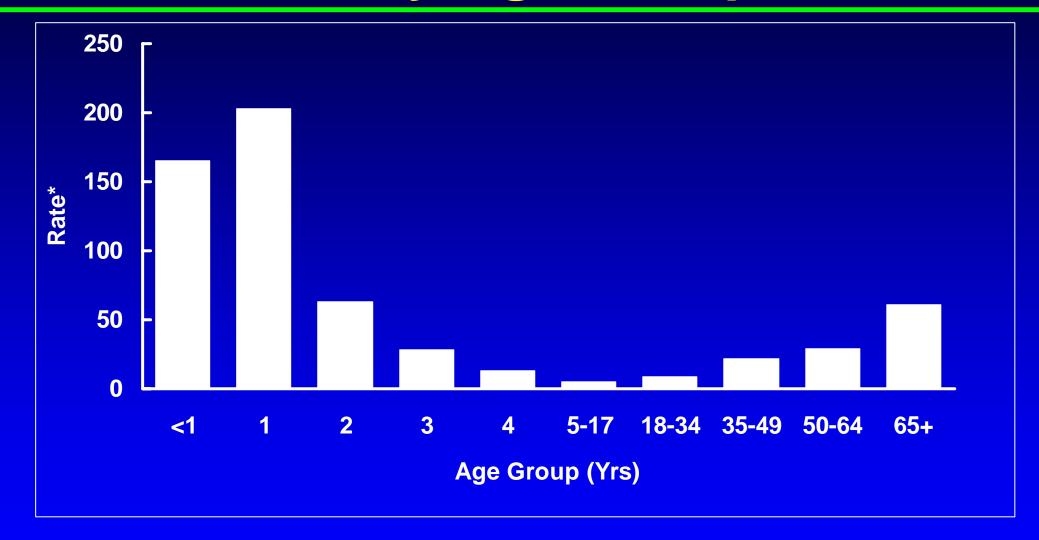
### Td + ap Vaccine

- Boostrix<sup>TM</sup> (GlaxoSmithKline)
   approved by FDA for use in persons
   10-18 years of age on May 3, 2005
- Adacel<sup>TM</sup> (sanofi pasteur)
   approved by FDA for use in persons
   11-64 years of age on June 10, 2005

### **Pneumococcal**



## **Invasive Pneumococcal Disease Incidence by Age Group - 1998**



\*Rate per 100,000 population
Source: Active Bacterial Core Surveillance/EIP Network



### Pneumococcal Polysaccharide Vaccine Recommendations

- Adults >65 years of age
- Adults with normal immune systems who have chronic illness
- Immunocompromised adults
- Persons with HIV infection
- Persons with cochlear implants
- Persons in environments or settings with increased risk



#### **PPV23 Revaccination for Adults**

- Revaccinate <u>once</u>
   (2 total doses maximum)
- >5 years after first dose

- Asplenia
- Immunosuppression
- Chronic renal failure
- Nephrotic syndrome
- Persons vaccinated at <65 years of age</p>

### Pneumococcal polysaccharide vaccine (PPV23)

#### CDC answers your questions

William L. Atkinson, MD, MPH, medical epidemiologist, CDC's National Immunization Program, answers your questions on pneumococcal polysaccharide vaccine (PPV).

How serious is pneumococcal disease?

An estimated 40,000 cases of invasive pneumococcal disease occur annually. Case-fatality rates are high, particularly when disease results in meningitis (~30%) or bacteremia (~20%). In addition, pneumococcal pneumonia, often a secondary complication of influenza, results in an estimated 175,000 hospitalizations annually.

My patient doesn't have a record of receiving PPV, but she believes she may have had it in the past. What should I do?

Persons with uncertain or unknown vaccination status should be vaccinated.

Should all nursing home patients be vaccinated against pneumococcal disease?

Yes. Standing orders for vaccination of persons admitted to long-term care facilities can help simplify the procedure.

Should people with asthma receive PPV?

Asthma is not an indication for routine pneumococcal vaccination unless it occurs with chronic If I give PPV to my patient now, must I wait a month before giving influenza or Td vaccine?

Inactivated influenza vaccine and Td toxoids may be given at the same time as or at any time before or after a dose of PPV. There are no minimum interval requirements between the doses of these or any other inactivated vaccines.

When should I vaccinate patients who are planning to have either a cochlear implant or elective splenectomy?

If time permits, give PPV to such patients at least 2 weeks before surgery. To obtain a copy of the official CDC recommendation "Prevention of Pneumococcal Disease."

call (800) CDC-INFO [(800) 232-4636] or go to ftp.cdc.gov/pub/publications/ mmwr/rr/rr4608.pdf

What needle length is recommended for administration of PPV to adults?

Pneumococcal vaccine may be given either IM or SC. Use a 1–1½" needle for IM, depending on muscle mass. For SC, use a ½-¾" needle.

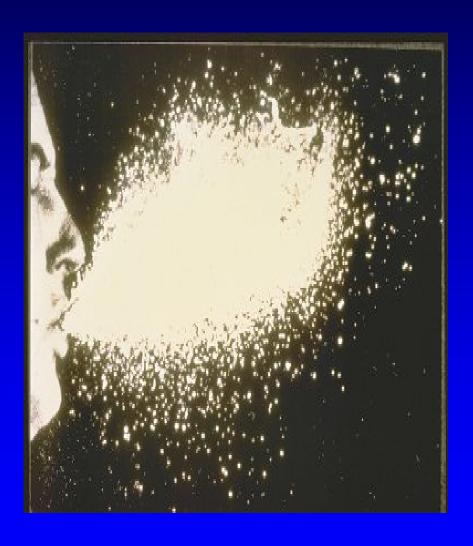
Which patients should also receive the pneumococcal conjugated vaccine (PCV)?

PCV is recommended for all children age less than 24 months as well as children ages 24–59 months with a high-risk medical condition. Consult the ACIP recommendations for more details (MMWR, Vol. 49, RR-9, 10/6/00).

Immunocompetent Persons				
Who needs pneumococcal (PPV) vaccine?	Who in the groups in the left column needs revaccination?			
Vaccinate all persons age 65 years and older.	Revaccination for healthy persons is not recom- mended. However, if a patient received the first dose prior to age 65, give a single revaccination at age 65 (or older) if at least 5 years have			

www.immunize.org/catg.d/2015pne.pdf

#### Influenza



~36,000 excess deaths per year

>90% of deaths
 among persons
 ≥65 years of
 age

## Estimated Influenza Vaccination Coverage

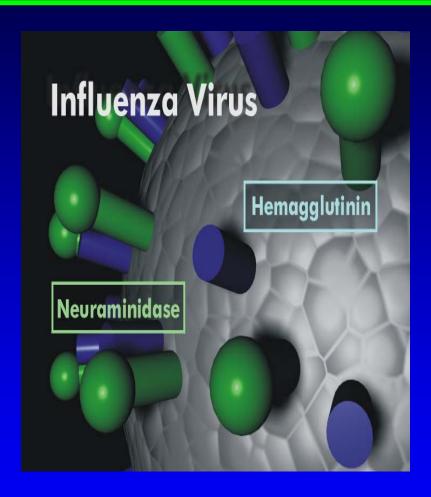
Selected Group	Percentage Coverage
Ages 18 – 64	26
(high risk)	
<b>Ages</b> ≥ 65	63
Pregnant women	12
Healthcare workers w/ patient contact	36
Household contacts	18

## Evolution of Influenza Vaccine & Recommendations

- 1945 whole virus inactivated vaccine licensed
- 1961 first routine recommendations for civilians
- 1970s started using subvirion vaccine
- 1964 1994 Targeting and defining high-risk groups
- 2003 live attenuated influenza vaccine licensed
- 2004 routine recommendation for children
   6-23 months of age and all pregnant women



#### Influenza Vaccine



- Trivalent (H3N2, H1N1, B)
  - A/California /7/2004(H3N2)-like
  - A/New Caledonia/20/99(H1N1)-like
  - B/Shanghai/361/2002-like
- Duration of immunity <1 year</p>
- Efficacy varies by age and health status, similarity to circulating strain
- Schedule annual
- TIV injection, inactivated
- LAIV intranasal, live attenuated



## Priority Groups for Influenza Vaccination

- All children aged 6–23 months
- Adults aged >65 years

- All women who will be pregnant during the influenza season
- Persons aged 2–64 years with underlying chronic medical conditions

## New Chronic Disease Risk Group (2005-2006)

Any condition (e.g. cognitive dysfunction, spinal cord injuries, seizure disorders or other neuromuscular disorders) that can compromise respiratory <u>function</u> or the handling of respiratory <u>secretions</u>, or that can increase the risk of <u>aspiration</u>

## Priority Groups for Influenza Vaccination

- Residents of nursing homes and long-term care facilities
- Children aged 6 months–18 years on chronic aspirin therapy
- Healthcare workers involved in direct patient care
- Out-of-home caregivers and household contacts of children aged
   <6 months</li>

## Other Groups for Influenza Vaccination

- People who provide essential community services
- People living in dorms or other crowded conditions
- High-risk travelers to Southern hemisphere April-September or traveling to the tropics or in organized groups at any time

## Live Attenuated Influenza Vaccine



- Healthy persons 5–49 years of age
  - Household contacts
     of persons at
     increased risk of
     complications of
     influenza
  - -Healthcare workers

#### **2004-05 Bad News**







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O News







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Personal Web Pages

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#### U.S. Flu Vaccine Supply Cut in Half

56 minutes ago

By LAURAN NEERGAARD, AP Medical Writer

**WASHINGTON -**Americans' supply of flu vaccine was abruptly cut in half Tuesday, prompting the government to ask most healthy adults to delay or



skip flu shots so that the elderly and others most at risk from influenza can get scarce supplies.

5 October 2004

**LIVE VIDEO** 



**HEADLINES** 

U.S. Flu Vaccine Supply Cut in Half

Hormone Leptin May Treat Infertility

Group Says Prevent 'Anesthesia Awareness'

Study Links Estrogen Pills, Blood Clots

P EDA Marne Levevul

# Planning for the 2005-2006 Influenza Season

Scenario	Total doses	Source of Vaccine
Base	~63 M	•TIV 60 M doses - sanofi pasteur •LAIV 3 M doses - MedImmune
Best	>> 63 M	<ul> <li>TIV 50-60 M doses - sanofi pasteur</li> <li>TIV 25-30 M doses - Chiron</li> <li>TIV 10 M doses GSK</li> <li>LAIV 3 M doses - MedImmune</li> </ul>
Worst	<< 63 M	<ul> <li>TIV &lt;60 M doses – sanofi pasteur</li> <li>LAIV 3 M doses - MedImmune</li> </ul>

# One Approach to Allocating a Scarce Resource



# **Priority Activities**

- Develop various supply scenarios as basis of plans
- Monitor manufacturer production projections closely
- Prioritize recommendations for vaccine
- Vaccine pre-booking
- Vaccine distribution policies
- Communication plans
- Education about use of antiviral medications
- Education about infection control

# **Long-Term Considerations**

Increasing number of influenza vaccine manufacturers

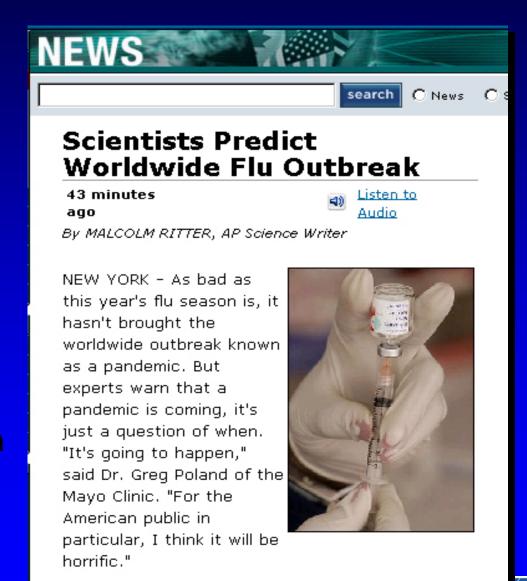
 Developing other technologies for manufacturing influenza vaccine

 Planning for the next influenza pandemic

## !!! Influenza Pandemic

"Experts agree that another influenza pandemic is inevitable and possibly mminent."

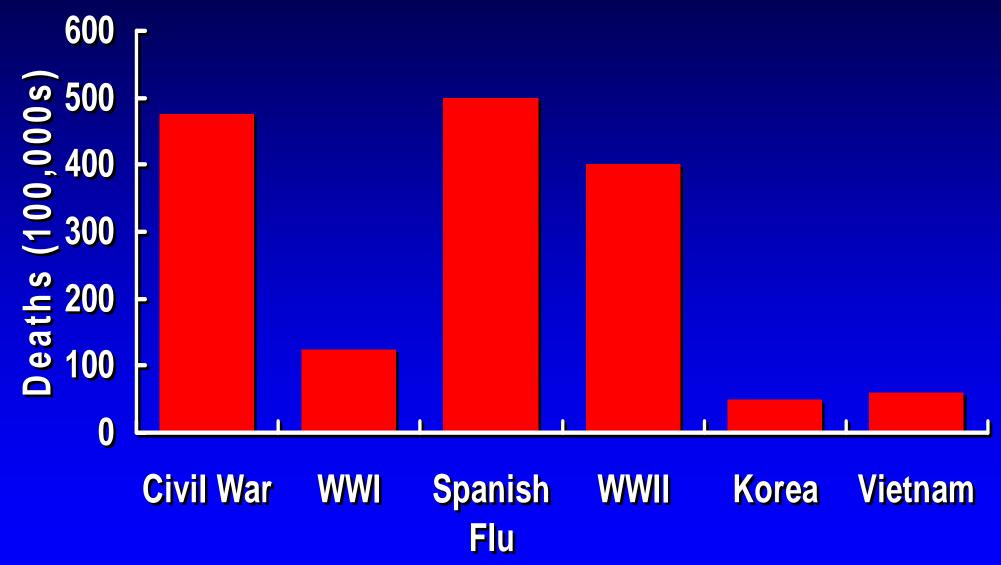
- World Health Organization **Avian influenza fact sheet 15 January 2004** 



# 20th Century Influenza Pandemics

- Spanish Influenza, 1918-1919 (H1N1?)
- Asian Influenza, 1957-1958 (H2N2)
- Hong Kong Influenza, 1968-1969 (H3N2)

# Spanish Influenza in Perspective



# **H5N1 Avian Influenza**

- Entire geographic areas will be affected simultaneously
- Healthcare and other service providers will be more likely to be affected than the public
- Healthcare facilities will be overwhelmed
- 89,000-207,000 deaths



# Pandemic Influenza Preparedness Plan Objectives

- Strengthen national and global capabilities for virologic and disease surveillance
- Improve national readiness to respond to a potential or actual influenza pandemic
- Strengthen influenza-related public health practices, infrastructure, and research

Clin Infect Dis 2002;35:590-6

# What does the future hold?



 Vaccines for sexually transmitted infections (HSV, HPV, GC)

 Vaccine for herpes zoster (shingles)

# Resources

# Self-assessment www2.cdc.gov/nip/adultlmmSched/



- First time visitor?
- About NIP
- Data and Statistics
- International Efforts
- Links to other web sites
- Glossary/ Acronyms

#### VIP sub-sites:

- **ACIP**
- Flu Vaccine
- Immunization Registries
- Vaccines for Children Program |
- CASA (Clinic quiz <u>Program)</u>
- AFIX (Grantee quiz)
- VACMAN

### NIP Site Search

Search

#### National Immunization Hotline

- English (800)232-2522
- Snanish (800)232-0233
- TTY (800)243-7889
- A Get Acrobat Reader"

Get Adobe Reader

**CDC Home** Search Health Topics A-Z National Immunization Program CONTACT US . HELP . leading the way to healthy lives TRAVELERS . Health Care Professionals Informacion Public **Partners** Media en Espanol

## What Vaccines do

Vaccines are recommended for children, but adolescents\* and adults can benefit from vaccines, too. Answer the questions in this quiz to find out what vaccines YOU may need.

- \* This guiz provides information for people age 11 years and older.
- 1. Complete the quiz.
- 2. Get a list of vaccines you may need.
- 3. Discuss the vaccines with your doctor or healthcare professional.

Privacy Policy & Disclaimer

### Part One, About You

1. Are you Female O Male. 2. For women only (Some vaccines can affect pregnancy.) I could become pregnant. I am pregnant now. 3. What year were you born? (Some vaccines are age-related.) 1994 🔻

#### Part Two, Your Lifestyle and Your Work

or other healthcare setting?

You may need certain vaccines because of where you live, the kind of work you do, or other lifestyle factors.

1.		g internationally in the near future? C No	
2.	·	reshman who lives in a dormitory at college? C No	
3.	Are you a resident in a nursing home?		
4	Do you work with r	atients in a nursing home doctor's office hospital	



# Tools Available to Support Adult Vaccination Efforts



**Adults Only Vaccination:** 

A Step-by-Step Guide

**S&H video** 

**Administration video** 

**Immunization cards** 

**Educational tools** 

**Available from** 

**Immunization Action Coalition** 

www.immunize.org/guide/index.htm



# **Assessing Immunization Practices**



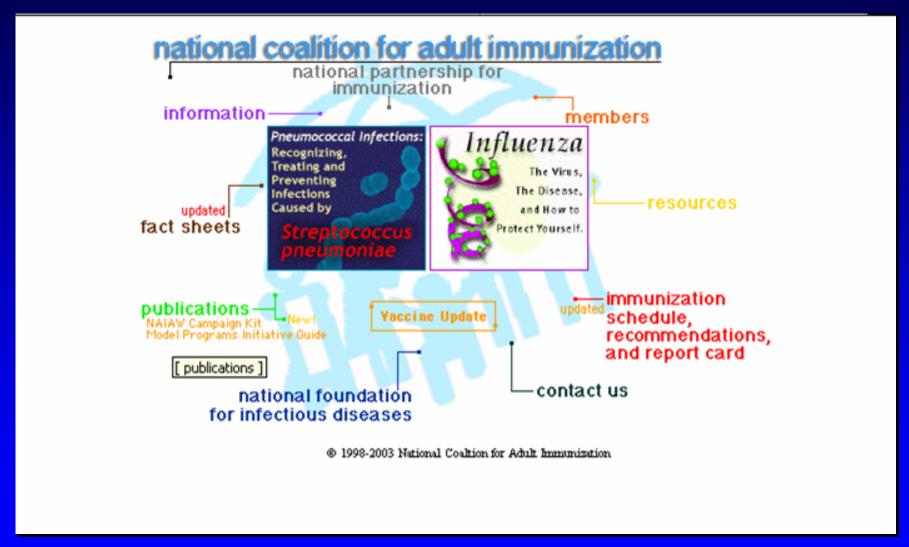
Adult
Clinic Assessment Software
(ACASA)

A tool for assessing adult immunization practices within a clinic

www.immunize.org/guide/index.htm



# **Adult Immunization Coalition**



www.nfid.org/ncai/



# Website: www.cdc.gov/nip Email: nipinfo@cdc.gov





#### VIP:

- NIP HOME
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- International Efforts
- <u>Links to other web</u> sites
- Glossary/ Acronyms

#### NIP sub-sites:

- ACIP
- Flu Vaccine
- Immunization
- Registries
- <u>Vaccines for Children</u>
   <u>Program</u>
- CASA (Clinic Assessment Program)
- AFIX (Grantee Assessment)
- VACMAN

NIP Site Search

Search

For Immunization Information, call the CDC-INFO Contact

English and Spanish 800-CDC-INFO 800-232-4636 **CDC Home** 

Search

Health Topics A-Z

## National Immunization Program

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Media

Informacion en Espanol

## In the Spotlight...for

## Healthcare Professionals

- Status of Licensure and Recommendations for New Vaccines (exit site)
   (May 27)
- Meningococcal Disease & Vaccines fact sheet (May 17)
- Childhood immunization schedule available in Spanish-language (Apr. 29)
- Vaccines Timeline (Apr. 28)
- Meningococcal Conjugate/Polysaccharide VIS available (Apr. 4)
- National Viral Hepatitis Prevention Conference: abstracts deadline: May 27 (Mar. 18)
- Vaccine Delays & Availability: Update (Mar. 14)
- More...Archived spotlighted items

Major topics:

Frequently Asked For | Vaccines | Diseases | Resources
Vaccine Safety | Specific Groups | News & Events
Statistics & Surveillance

Topics below:

Vaccine Safety | Vaccines | Resources | Education/Training Reminder Systems | Patient Education | Guidelines | Events Diseases & Surveillance | Research and Development Software Tools | Immunization Schedules | Storage & Handling

## News, Calendar & Events

- News, Newsletters, & Listservs
- Calendar of events
- NIP Events and Programs
- > More items...

## Vaccine Safety

- Clinical Immunization Safety
  Assessment Centers
- Simian Virus-40 and vaccines Q&As and fact sheet
- ► Vaccine Safety Issues: A Z
- Overview (history & NIP's efforts)
- The provider's role
  - Contraindications: who should not

## Recommended Vaccination/

- Immunization Schedules
  Vaccine Quiz Helps Adults Decide
- If They Need Vaccines New!

  Make a vaccination schedule
- Make a vaccination schedule for your patient (birth to 5 years)
- Childhood and Adult vaccination schedules 2005 versions now
- Catch-up Schedule
- More items...

## **Vaccines**

- ABCs of Childhood Vaccines presentation
- Vaccines chart (autal reference)

# Recommendations of the Advisory Committee on Immunization Practices

- General Recommendations
- Adult Immunizations
- Healthcare Workers
- Immunocompromised Persons
- Individual Vaccines

www.cdc.gov/nip/acip

# www.cdc.gov/nip/publications/vis



## IP:

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## NIP Site Search

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- Spanish (800)232-0233
- (800)243-7889
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MIP HOME | Professional

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Publications > VIS

## Vaccine Information Statements (VIS)

At a Glance: Vaccine Information Statements (VISs) are information sheets produced by the Centers for Disease Control and Prevention (CDC) that explain to vaccine recipients, their parents, or their legal representatives both the benefits and risks of a vaccine. Federal law requires that VISs be handed out whenever (before each dose) certain vaccinations are given.

## Contents of this page:

· Vaccine Information Statements (VISs)

Anthrax | DTaP | Hepatitis | Hib | Influenza | MMR Meningococcal | PPV23 | PCV7 | Polio | Rabies Smallpox | Td | Typhoid | Varicella | Yellow Fever

- Combination vaccines
- Audio files

Tetanus/Pertussis

(DTaP) 7/30/01

VISs in other languages (e.g., Spanish)

## Related links:

- VIS facts (answers FAQs) NEW!
- · Instructions for using the VISs
  - Instructions in .pdf format
  - Text-only version of instructions

## Vaccine Information Statements (VISs)

Audio 🚳

Vaccine(s)	(.pdf) printable (.txt) text-only* (.wma) Audio** Other languages***
Anthrax 4/24/03	Anthrax printable version in English Text-only (screen-reader device version) Other languages** not current
Diphtheria/	DTaP printable version in English

Text<u>-only</u> (screen-reader device version)

Other languages (including Spanish) \*\*

# **International Travel**







www.cdc.gov/travel



# www.cdc.gov/nip/ed/ciinc





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Health Topics A-Z

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## NetConferences

Immunization NetConferences are live, 1-hour presentations combining an **online visual presentation** with **simultaneous audio** via telephone conference call and a live **question and answer** session.



These presentations, collectively titled "Current Issues in Immunization," are scheduled 4 times per year. Specific topic(s) will be announced prior to each presentation.

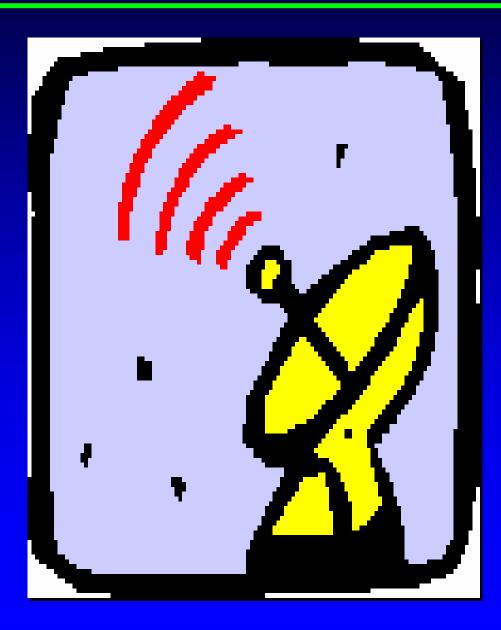
## NEXT PROGRAM

July 14, 2005

For more information about this NetConference, and links to archived sessions, Visit the <u>Current Issues in Immunization Netconference</u> web page.

NIP Site Search

# Live Satellite Broadcast



Immunization Update July 28, 2005

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Immunization